array. Adjusting the potential applied to the working electrode on the array results in the deposition of materials from the delivered plating solutions.

Another embodiment of the invention includes an electrochemical testing system comprising an electrochemical cell, a multi-channel potentiostat, and an electronic interface designed to couple the addressable array to the potentiostat such that individual electrodes on the array may be addressed, either serially or in parallel, for the measurement of a specific material property under investigation.

BRIEF DESCRIPTION OF THE DRAWINGS

In order to better understand the present invention, reference should be made to the following detailed description taken in conjunction with the accompanying drawings wherein:

FIG. 1A illustrates an array of 64 individually addressable electrodes made in accordance with the present invention;

FIG. 1B illustrates an array of 66 individually addressable electrodes made in accordance with the present invention;

FIG. 2A is a flow chart diagram describing the processes involved in fabricating individually addressable electrode arrays;

FIGS. 2B and 2C are examples of masks for array fabrication;

FIG. 3 is a sectional view of the electrochemical deposition head;

FIG. 4A is a sectional view of the electrochemical cell;

FIG. 4B is a sectional view of the cathode assembly associated with the electrochemical cell of FIG. 4A;

FIG. 4C is an exploded view of the anode assembly associated with the electrochemical cell of FIG. 4A;

FIG. 4D is a sectional view of the PCB interface associated with the anode assembly of FIG. 4C;

FIG. 4E is a circuit diagram showing the electrical connections in the PCB interface of Fig. 4D; and